Review Article

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The Risk of Infant Cancer after using Neonatal Vitamin K

Abstract

Background: In two recent trials, new-borns who received injectable vitamin K had a twice-as-high incidence of childhood cancer as compared to the general population. A link between the two would have substantial public health implications considering that this medicine is administered to almost all new-borns in the United States.

Techniques: In a conclusive case-control study using data from the Cooperative Perinatal Task, a multicenter, ongoing investigation of pregnancy, delivery, and young, we examined the relationship between vitamin K and disease. 54,795 kids born between 1959 and 1966 were found to have 48 instances of cancer after their first day of life and before their ninth birthday. Each case child received one of five randomly chosen controls, whose most recent study visit was at or after the age of the case child who was diagnosed with cancer. To calculate the amount of vitamin K eaten, study forms and medical records were consulted.

Results: The odds ratio was 0.84, with vitamin K administered to 68 percent of the 44 case children and 71 percent of the 226 controls for whom information was available. The 95% confidence interval is between 0.41 and 1.71. For leukemia, the likelihood ratio was 0.47, while it was 1.08 for other cancers. Sequential correction for potential confounding factors did not materially change the outcomes.

Conclusions: We observed no association between vitamin K intake and an increased risk of any or all pediatric malignancies taken collectively, despite the possibility of a modest increase in risk. The benefits of vitamin K prophylaxis in avoiding hemorrhagic illness in new-borns have been extensively discussed. Until there is more proof that there is a connection between vitamin K and cancer, there is no reason to stop regularly providing vitamin K to new-borns.

Keywords: Public Health • Cancers • Developmental Follow-up • Vitamin K

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Introduction

Typically, vitamin K is given to newborns to prevent hemorrhagic illness. However, current research indicates that intramuscular vitamin K treatment doubles the risk of pediatric cancer. If this link were causal, it would have serious effects on public health. Given that this medication is given to almost all newborns, vitamin K may be to blame for half of all pediatric malignancies in the United States, Canada, and much of Europe. Intramuscular vitamin K administration to newborns has become commonplace in the United States since since the American Academy of Pediatrics recommended it as a normal practice in 1961 [1].

To look into the alleged cancer risk, we chose a sample of kids born between 1959 and 1966. During this time, taking vitamin K became more typical than unusual. Since almost all

children born in the United States during the past three decades have received vitamin K, this cohort represents one of the few chances to address vitamin K's carcinogenicity in this nation.

In the cohort, there were 54,795 live births, and 48 of those babies were diagnosed with cancer before turning one. In order to account for follow-up loss, life-table approaches were utilized, which led to a cumulative incidence of 1.1 incidences of all malignancies and 0.4 cases of leukemia per 1000 kids who were monitored until they were 90 months old. The next most frequent cancers were hepatoblastoma, neuroblastoma, Wilms' tumour, lymphomas, retinoblastoma, rhabdomyosarcoma, fibrosarcoma, and neuroblastoma. After matching each case kid with five controls, the study sample consisted of 48 cases and 240 controls [2].

Materials and Methods

The traits of the cases and controls in this cohort, usage of vitamin K rose over time the findings of our inquiry examined how vitamin K exposure relates to cancer. The odds ratio for all cancers was 0. For a youngster who received vitamin K exposure as contrasted to a child who did not. Children who were exposed to vitamin K did not have a higher incidence of leukemia. Adjusting for variables including race, sex, birth date, birth weight, maternal age, prenatal x-ray exposure, or breastfeeding did not significantly change the outcomes. The small number of occurrences of various types of malignant development precluded the conduct of a subgroup investigation. When cancer was found before a child turned one and was treated, the results were comparable. When children who received vitamin K during their mothers' intrapartum care were classed as unexposed, their chances of acquiring cancer were 0.88 times higher than those of children who did not receive vitamin K during their mothers' care [3].

Four cases of cancer could not have been suitable for the study because the cancer might have had a recognized etiology that wasn't connected to vitamin K intake or the diagnosis might not have been certain. One child had a fibro sarcoma of the left butt cheek, which was successfully removed. Later, he developed a fibroma on his right buttock, which sparked questions regarding neurofibromatosis or another 1712 anomaly. At the end of the seven-year follow-up, a young woman was diagnosed with leukemia; however, despite the date of diagnosis being noted, we were unable to get her medical records. Due to the lack of a biopsy, it was impossible to determine in two different cases if a mind cancer was dangerous. In one case, the tumour was found during surgery, but in the other, the tumour was found during ventriculography but no surgery was performed. Both times, the kids died, and requests for an autopsy were turned down. After removing these four probable cases of cancer, the risk ratio for all malignancies in children exposed to vitamin K was 0.75. Many of the vitamin K brands used in the CPP are no longer manufactured or are not advised for newborn prophylaxis. The only vitamin K brands currently approved for this use in the United States are Aquamephyton and Konakion. For infants who got these brands, the cancer risk ratio was 0.57 [4].

14 controls and 4 cancer-affected kids' vitamin K exposure could not be determined due to a lack of information. By looking at the records of other children who were born at the same time at the same hospital, we were able to assess whether vitamin K was likely given since at a specific period and in a specific hospital, either all children received vitamin K or none did. One child with malignant growth and eight controls were anticipated to have received vitamin K at the time this was concluded; in this study, the ratio of exposure to cancer among exposed children was 0.82. Discussion Children who got vitamin K during the perinatal period did not have an increased risk of leukemia in specific or cancer in general; even under the most improbable scenario, the odds ratio would still be 1.19, and cancer would not be much more common among those kids. This outcome is in line with the finding that between 1948 and 1980, the prevalence of childhood leukemia in the United States did not increase. The higher confidence limits of our findings do not take into account the risk ratios for all malignancies and leukemia among children exposed to vitamin K in the two investigations. Despite the overlap between their and our confidence intervals. It was discovered in one of the studies that ingesting vitamin K did not increase the

risk of cancer. We are unable to address this problem because there was just one child in the CPP sample who received vitamin K orally. Our results, however, show that intramuscular vitamin K delivery is secure [5].

Discussion

The study we conducted has certain advantages. The data were tentatively collected, and the example did not lend itself to being biassed in any way about malignant growth. The results could not possible have altered the records of vitamin K consumption. The records are more complete than typically acquired clinical information because they were crucial for an exploration study. Individual exposure data were gathered for 94% of the individuals. Based on national data on incidence according to age, race, and sex, the likelihood of getting cancer by the age of 7 1/2 years in a cohort with the racial makeup of the CPP sample is 1.1 per 1000. Leukemia has a 0.35 risk of developing for every 1,000 people. It is probable that very few cases were missed given that these rates are almost identical to the observed incidence rates of 1.1 and 0.4 per 1000, respectively. Additionally, controls and case children had similar follow-up durations, which lessened the possibility of variations in cancer diagnosis [6].

The controls and case kids were not matched based on the study centre or date of birth since at any one time, either all or none of the kids got vitamin K. But in theory, this might be problematic. If vitamin K was given, the presence of a carcinogen in one hospital or at one moment might artificially boost or lessen the connection between vitamin K and cancer. Thankfully, there don't seem to be any temporal, local, or hospital-based cancer "epidemics" at the 12 CPP sites. If there was no proof that the study location itself was a risk factor for childhood cancer, matching for site would have been regarded as overmatching. This might have significantly reduced the statistical power of our investigation to establish a relationship between vitamin K and cancer.

The upper 95% confidence limit of 1.36 is statistically compatible with a small increase in risk, but there was no indication that the two vitamin K brands currently approved for use in newborn prophylaxis were associated with an elevated risk of cancer. Our results contradict the theory that phenol, the preservative used in Konakion, may cause cancer. The vehicles used in the Konakion preparations in the United States and the United Kingdom differ slightly. Since none of the brands used in the CPP contained the vehicle utilized in the UK, we are unable to determine the safety of the preparation [7, 8].

Conclusion

The chance of pediatric leukemia or other cancers is not increased by perinatal vitamin K intake, according to our research. The possibility of tiny increases in the overall risk of cancer, particularly for certain forms of cancer, cannot be completely ruled out based on our findings, despite the small number of instances. Unless more conclusive evidence suggests a higher risk of childhood cancer, we support the American Academy of Pediatrics' recommendation that infants get injectable vitamin K. Due to vitamin K prophylaxis's well-established advantages, this is the case [9, 10].

Acknowledgement

None

Conflict of Interest

None

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